Session 5: Municipalities

Warren Nevad

-University of Tennessee-

-Municipal Technical Advisory Service-

THE UNIVERSITY of TENNESSEE
MUNICIPAL TECHNICAL ADVISORY SERVICE

Tennessee Alternative Fuels and Bioenergy Conference

Municipalities Section

- Warren Nevad
- UT-MTAS Management Consultant
- August 17, 2010

FUTURE
Changing tomorrow, today.

Agenda: Municipalities Section

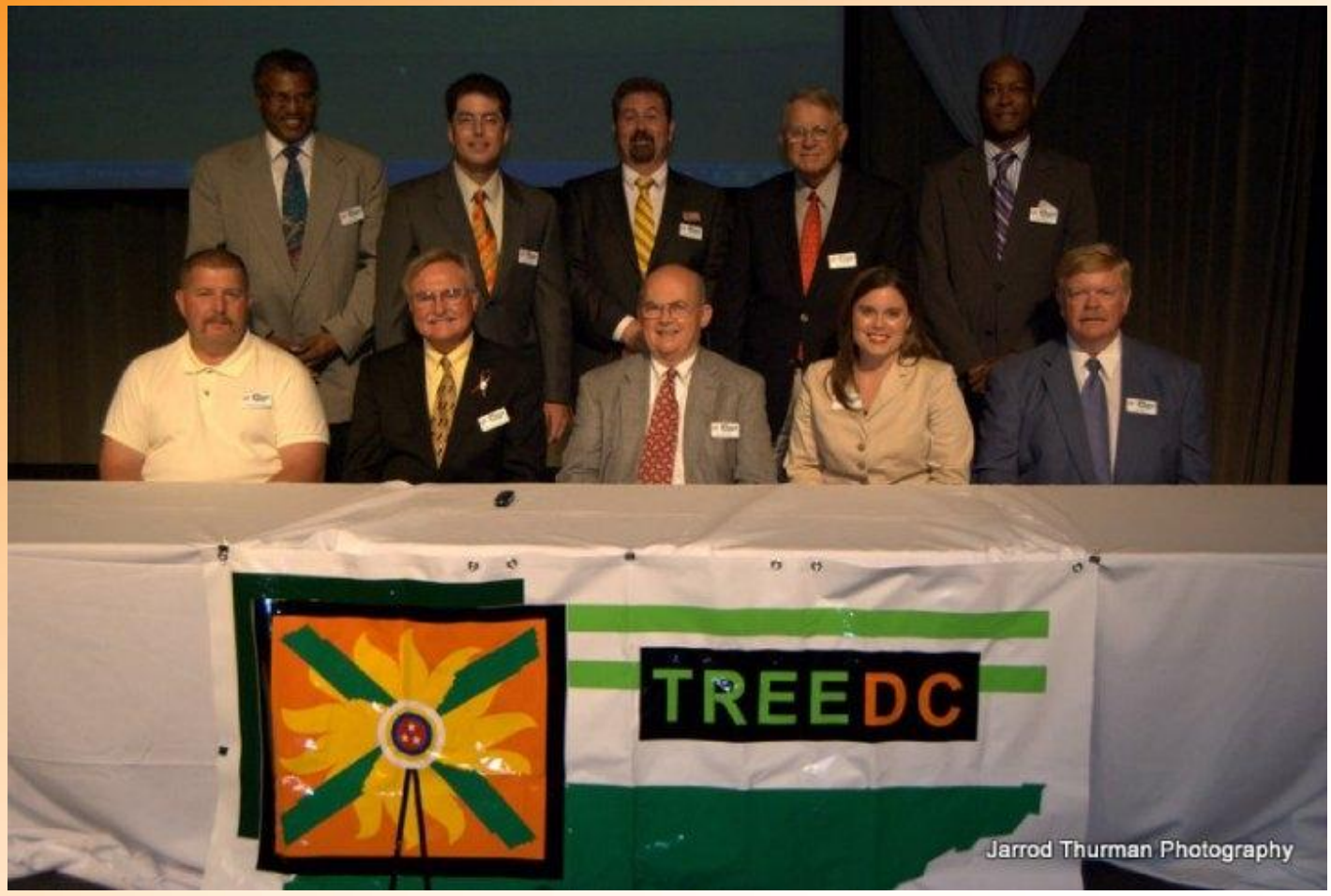
- History/Mission of MTAS/TREEDC
- Statewide Community Forums
- TREEDC Projects
- 2011 Goals
- Cities / Speakers

History/Mission

1. MTAS – 1949 TML:347 cities – mission – make cities be the best they can be - 30 consultants– associations – energy – cities use a lot
2. TREEDC -2008 by 4 Mayors/UT President Emeritus Joe Johnson: follow up to 2007 Biofuels conf. – mission – promote renewable energy with economic development and best management practices for all TN communities.
3. Advisory Board – MTAS/TREEDC – not a typical green organization – not a trade organization

Founding Executive Committee
Fall Creek Falls

- Pikeville Mayor Greg Johnson – Bledsoe Co
- Gainesboro Mayor John Fox – Jackson County
- Crossville Mayor JH Graham – Cumberland
- Graysville Mayor/Comm Andy Beene – Rhea County



TREEDC - Franklin

Why TREEDC

1) ***Building Relationships*** - *Ground floor* MTAS, UT, State, TVA – "built in people infrastructure and markets"

2) ***Outreach:*** Provide educational and networking opportunities for all interested parties- among the people

3) ***Technical Assistance:*** Cities/counties lack resources to recruit development and need help

4) ***Business Development*****:** Companies need help achieving developmental objectives relating to incentives and workforce development.

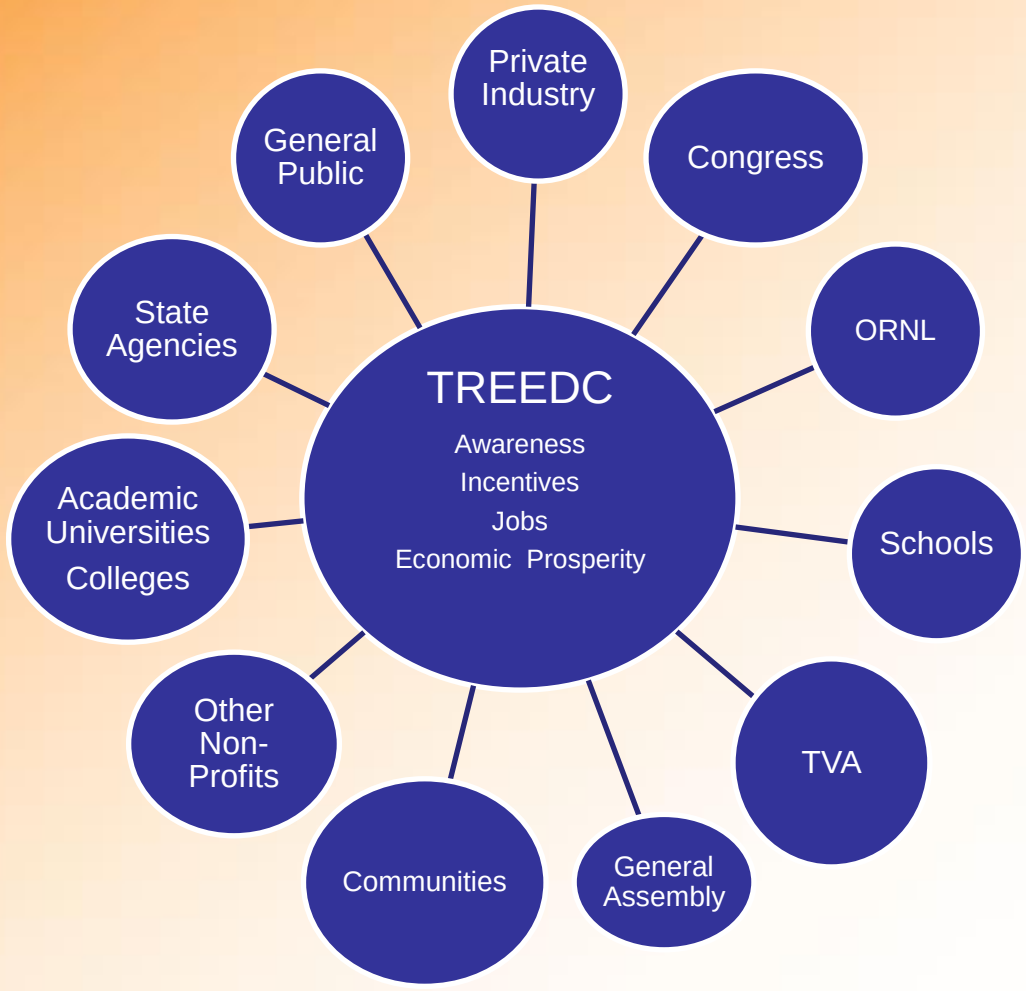
Why TREEDC

5) ***State of Tennessee Energy Initiatives*:** The State has limited resources – we need to support its goals and deliver their message.

6) ***Research & Development*:** UT and ORNL need help in translating their research and development to market. Genera ambassador.

7) ***Coordination of Energy Needs*:** TREEDC will be a tool for communities to coordinate and assess data of total energy usage and distribution of fuels and energy.

TREEDC Wheel



Statewide Community Forums

1) Regional Symposiums in Pikeville, Memphis, Jackson and Franklin TN -Attended by 312 officials or designees. Starts with research.

2) Presentations - UT/Dupont Danisco - TVA, Maupin Gasification, Nissan Electric, Memphis Bioworks and StrataG

   http://www.mtas.tennessee.edu/public/web.nsf/Web/Economic+Development

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TREEDC Projects

1) TVA Fly Ash Spill/Roane County/Kingston Long term Impact Plan – help resulted in $43 million
2) Technical publications : Municipal Biodiesel/Energy Management
3) Crossville, East Ridge and Clarksville Biodiesel
4) Energy Efficiency Grants- Whitwell/Ducktown/Pikeville/Gainesboro/Kingston
5) Upcoming Forum Oct. 22-Roane State
6) www.treedc.us

FUTURE
Changing tomorrow, today.

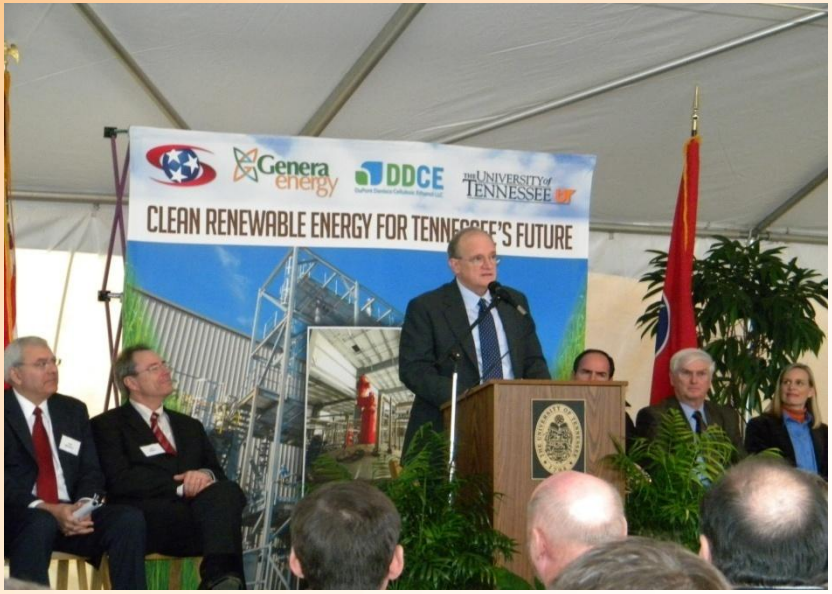
2011 Goals

- Expand market opportunities for energy-related feedstocks and products.
- City/County Biodiesel Community Grant Program
- Statewide Trashanol Feasibility Study
- City/County Wastewater Biosolids
- City Wastewater Microhydroelectric feasibility study
- Education/Awareness
- Renewable Energy 101
- Mobile Bioenergy Center
- TML Green City/County USA Program-TML
- Green Directory

Cities

- Jackson- Councilman Ernest Brooks
- Franklin- Sustainability Dir Andrew Orr
- Covington – Mayor David Gordon
- Ducktown – Mayor James Talley

Grand Opening – Vonore, TN



Conclusion – TREEDC

- Who – Organization of mayors promoting renewable energy
- What – Connect renewable energy with job creation and economic development
- Where – Operate statewide- headquarters – Pikeville, TN
- When – Started by MTAS, UT and McBee Bailey in 2008
- Why – Energy independence, protection of the environment and jobs for our communities
- How – Continue building relationships with the emerging green economy in TN
- www.treedc.us

Russell Beals

-Biodiesel Logic-

-Vice President-

BioFuel Equipment Sales LLC

BFES

Recycle our resources for a better tomorrow

Manufacturer's Representative for

Biodiesel Logic Inc™

PRESENTS

ALABAMA INSTALATIONS

Municipal Involvement with Waste Vegetable Oil

- Garbage Collection
- Sewers

Advantages of WVO Program

- Reduce Fuel Costs
- Reduce Emissions
- Reduce Sewer Maintenance Expenses

City of Hoover, Alabama


Processing
Unit


WVO
Waste Vegetable oil
BIO-DIESEL
STOP
ONLY

City of Gadsden, Alabama

Montgomery, Alabama
Alabama Dept. of Agriculture
Center for Alternative Fuels


CENTER FOR ALTERNATIVE FUELS

City of Andalusia

Anniston, Alabama (Calhoun County)


MACK


MACK

City of Enterprise, Alabama


FORT RUCKER
U
S
A
ENTERPRISE
City of Progress
ADECA
ENTERPRISE, ALABAMA
CITY OF PROGRESS
BIODIES


ENTERPRISE, ALABAMA
CITY OF PROGRESS
BIODIESEL


BIODIESEL

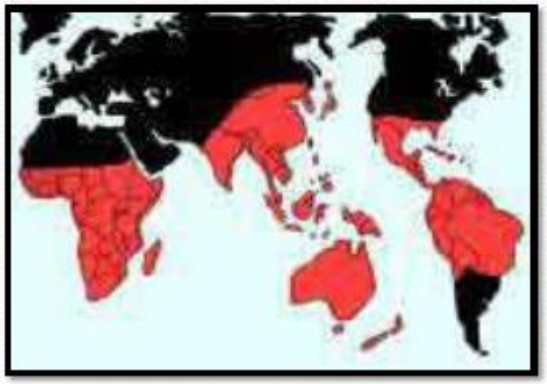
For More Information Contact:
Russell Beals
BioFuel Equipment Sales, LLC
PLEASE TAKE A CARD

YELLOW HORN

A COLD WEATHER BIOFUEL TREE

Yellow-Horn with the scientific name (Xanthoceras Sorbifolium) belongs to sapindaceae family, and a species utilized for oil in China for decades. It has huge potential for producing oil which can be processed into biodiesel. It has been listed as one of the top eight species of trees worldwide by renown horticulturalist Professor Li Changxiao for producing oil for biofuel. The latitudinal range of China is geographically similar to the United States. Yellow-Horn grows well in large geographical areas of the world. It grows in winter seasons to minus 21 degrees Fahrenheit. Yellow-Horn can assist in eliminating desertification and erosion.

WORLDWIDE YELLOW HORN GROWING ZONE
IN BLACK



YELLOW HORN PLANTATION IN OUTER MONGOLIA

YELLOW HORN THE TREE

- Yellow-Horn can live for over two hundred years.
- It grows in areas with precipitation as low as 6 inches annually.
- It matures in height to 22 feet and 14 feet wide.
- The leaves are alternate, pinnate, 6"-8" in length with an odd number of leaflets.
- Leaflets are approximately 2" to 2 1/2" in length.
- Flowers cluster in panicles on terminal ends of branches & lateral branches.
- Individual flowers are white, and approximately 1 inch across.
- The throat is initially yellow then turns red in maturing.
- Flowering occurs in early to middle April and lasts for about 10 days.
- Fruit is a 3 valve capsule containing 3 seeds 1/4 to 3/8 inches diameter.
- Fruit matures in July or August.
- Flowering can commence in the second year of age.
- Crop yields reach 95 percent by year five of age.
- The pericarp of the fruit contains 12.2 percent furfural.
- The seed and capsule combined has 40% oil content. Seed alone has 72%.
- With proper nutrition and moisture fruit yield can be 8 tons per acre.
- Average oil yield is about 850 gallons per acre. Higher yields are possible.

AGRICULTURAL PRACTICES

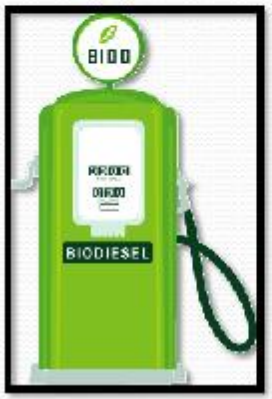
•Yellow-Horn delivers higher yields when 14-12-10 fertilizer is applied during blooming and fruiting. Adequate water during these periods is important.
• Pruning begins when a hedgerow is required for harvesting.
• Over-the-row mechanical harvesting is utilized.

INCENTIVES FOR PLANTING YELLOW HORN

- The U.S. Government will pay 75% of the cost to purchase the seedling.
- The U.S. Government will pay 75% of the cost to plant the seedling.
- The U.S. Government will pay 75% of the cost of land preparation to plant.
- The U.S. Government will pay the rent on the land for up to 15 years until crop yields.
- The U.S. Government will pay $16.00 per ton for tree trimmings for 2 years.
- Grower must submit a program to the USDA for approval for these incentives.
- Yellow Horn LLC will submit a program for the grower with purchase of seedlings.

VALUE ADDED PRODUCTS

- Yellow Horn yields an average of 850 gallons per acre of oil.
- Oil can be sold as cooking oil.
- Oil can be processed into biodiesel.
- Furfural from the pericarp for tetra-hydrofuran.
- The tree trimmings can be processed into biomass pellets.
- Electrical power sale by co-gen power from biomass.



ECONOMICS

1)Year four of tree age 2) 7 tons per acre yield of fruit 3) Agricultural inputs $86.00 per acre annually years 1 thru 3, and $174.00 per acre year 4 forward 4) Seedling subsidy 75% of cost 5) Planting subsidy 75% of Cost 6) Land rent subsidy at 40.00 per acre annually 7) Tree pruning subsidy $16.00 per ton 8) Income and Expenses are on a per acre basis 9) The additional biodiesel profit requires a mill and biodiesel processing equipment.

ITEM	Year 1 Per Acre	Year 2 Per Acre	Year 3 Per Acre	Year 4 Per Acre	Year 5 Per Acre
Land Subsidy	40	40			
Seedling subsidy	715.27				
Planting Subsidy	35				
Tree Prune Subsidy				32	41
Income Fruit			186	846	1302
Fertilizer rebate	40	40	40		
Fertilizer	-38	-38	-38	-38	-38
Pesticide	-16	-16	-16	-16	-16
Fungicide	-21	-21	-21	-21	-21
Prune Cost				-13	-13
Harvesting Cost				-45	-45
Transportation Cost				-11	-11
Seedling cost	-954				
Planting Cost	-35				
Annual Total Fruit	**-233.73**	**5**	**151**	**734**	**656.27**
Add Profit Biodiesel			**148**	**676**	**1042**
Biodiesel & Fruit	**-233.73**	**5**	**299**	**1410**	**1698.27**

Andrew Orr

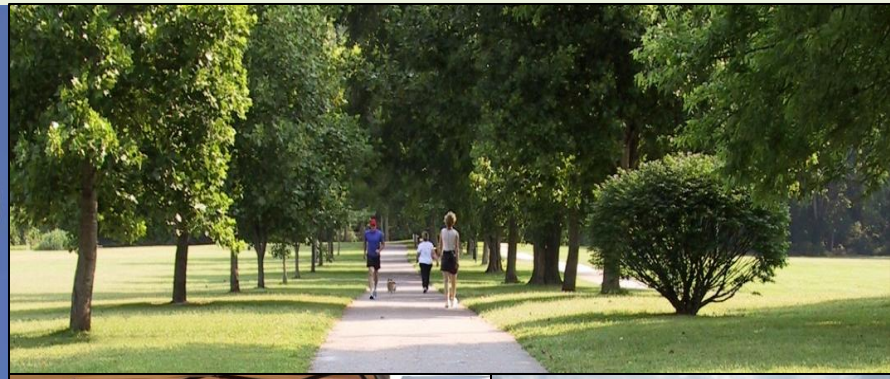
-City of Franklin-

-Sustainability Coordinator-

Franklin, Tennessee

A Framework for Sustainability

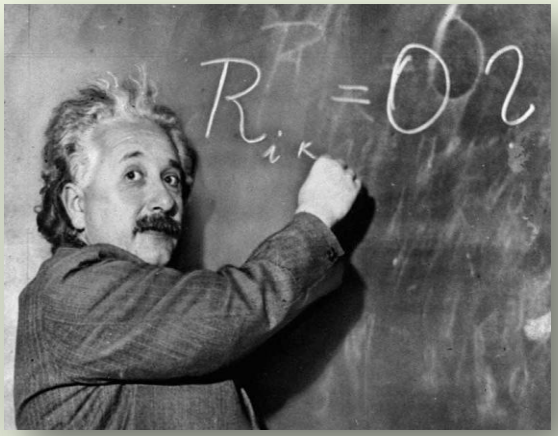









Community Buy-In



ALTERNATIVE ENERGY ACTION 1: Replace 5% of the vehicles registered in the C that use alternative energy sou

Waste Reduction Action 2: I participation in the blue bag pro 40% by the spring of 2011

TRANSPORTATION ACTI 1: Develop a preferred parking program for green vehicles in two City-owned parking garag downtown Franklin by June 1

URBAN SYSTEMS ACTION Create a local incentive based p program for the design, develo and construction industries to encourage sustainable practic projects by December 31, 20

TRANSPORTATION implementation of a regio needs of commuters between Spring Hill and downtown Nashville by 2013.

ENERGY ACTION 2: Increase the number of Franklin entities cy audits by 50% per capita by

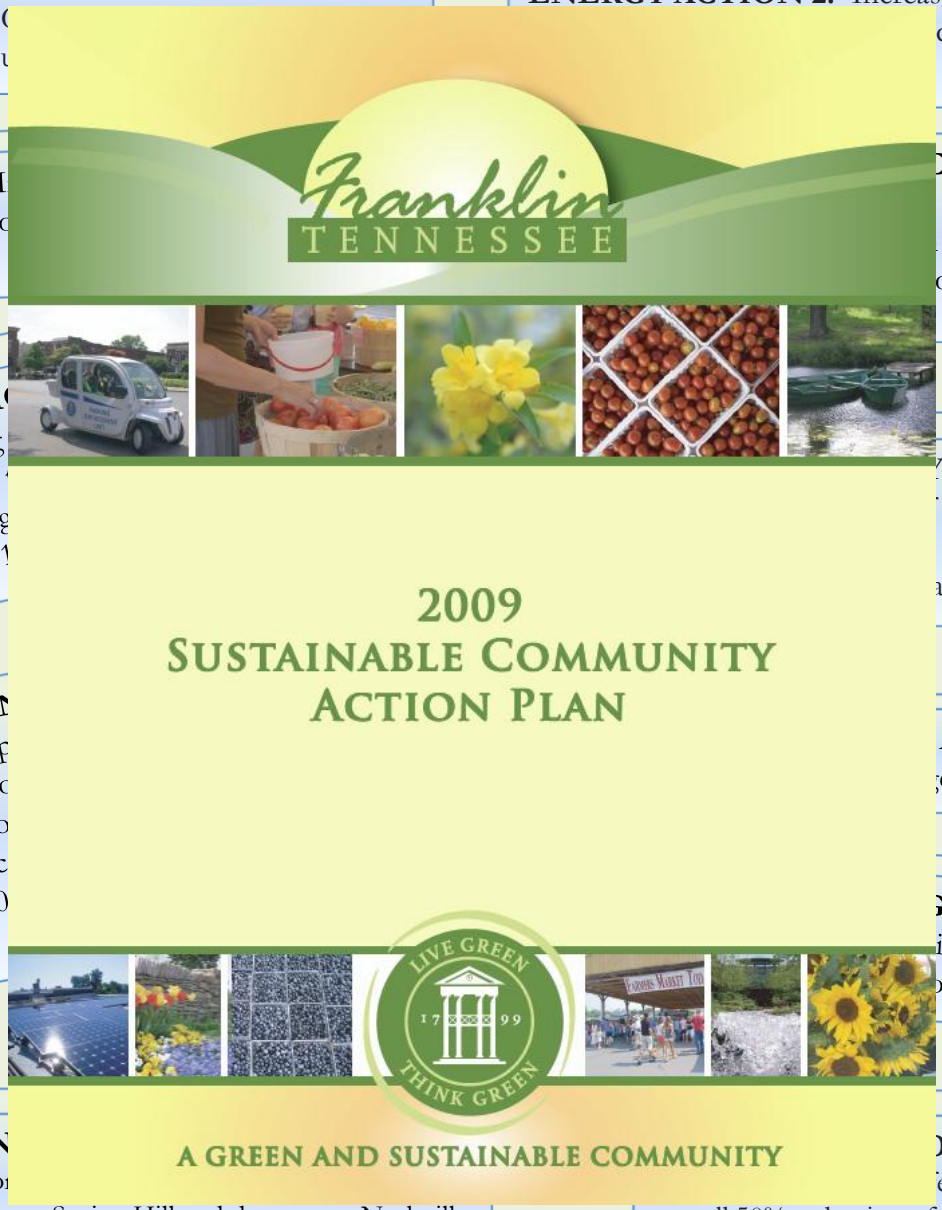
CTION 1: Reduce potable water the Franklin City Limits by 25% October and by 10% during the onths by 2014.

ACTION 2: Increase the Franklin entities that in energy efficiency audits by apita by 2014.

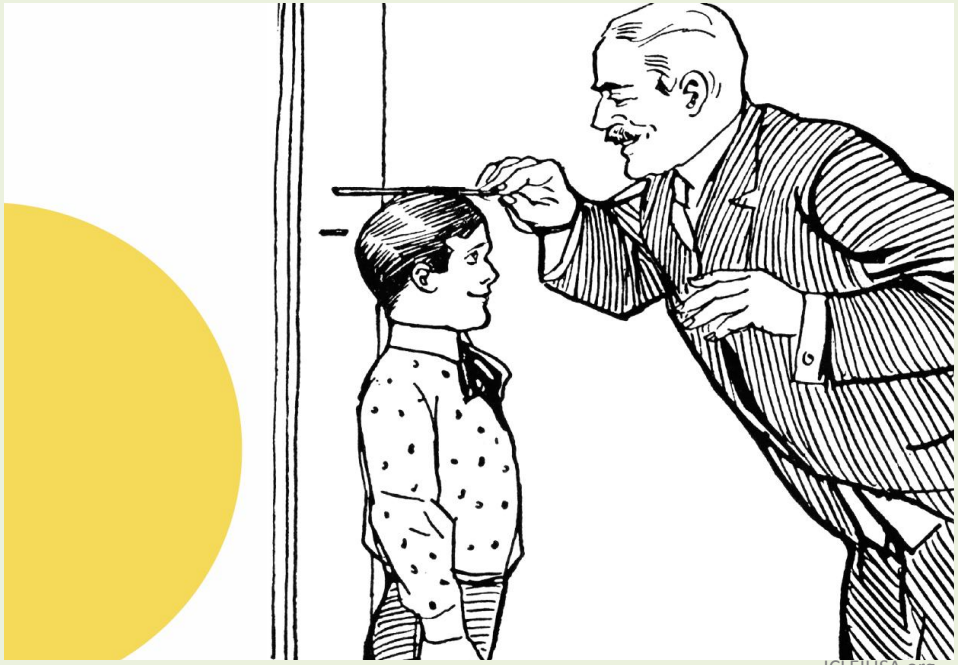
ACTION 1: Reduce total Citywide e 20 percent per capita by 2014.

GY ACTION 4: Increase total ity-wide solar energy on 100% by 2012.

ON ACTION 2: Strive for a 10% erred to landfills annually to achieve overall 50% reduction of waste transferred to landfills by 2015, and 75% reduction of waste transferred to landfills by 2030.



Measuring the 2009 Actions



…Benchmarking Sustainability in Franklin

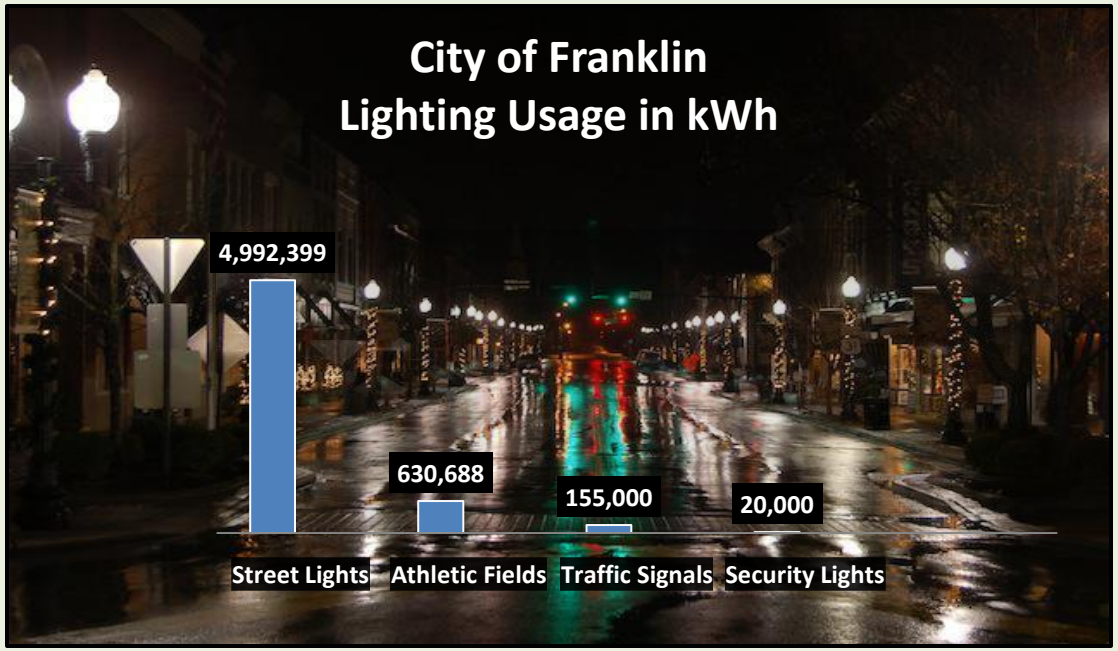
…Benchmarking Waste Reduction

Residential Waste Statistics FY 2009		
Type of Waste Collected	**Amount**	**Destination**
Trash	22,246 Tons	Landfill
Yard Waste	5,936 Tons	Compost
Recycling Drop-Off Centers	925 Tons	Recycling Center
The Facts		
110 miles roundtrip to landfill; $20 fee per ton		
18,100 residential collection points;		
The City delivered a total of 79,500 tons of refuse to landfill in 2008		
Source: City of Franklin Solid Waste Department		

…Benchmarking Transit Ridership

Route #91 Franklin – Brentwood Express Bus Ridership					
	Franklin	Cool Springs	Brentwood	Total	Average
Month	Passengers	Passengers	Passengers	Passengers	Daily
Dec-09	444	239	343	1,026	47
Jan-10	475	440	424	1,339	70
Feb-10	502	527	500	1,529	76
Mar-10	586	584	606	1,776	77
Apr-10	578	524	555	1,657	75
* May-10	494	360	467	1,321	78
Jun-10	657	647	604	1,908	87
Source: TMA Group					

City of Franklin Lighting



Lighting makes up nearly a quarter of all City of Franklin GHG emissions.

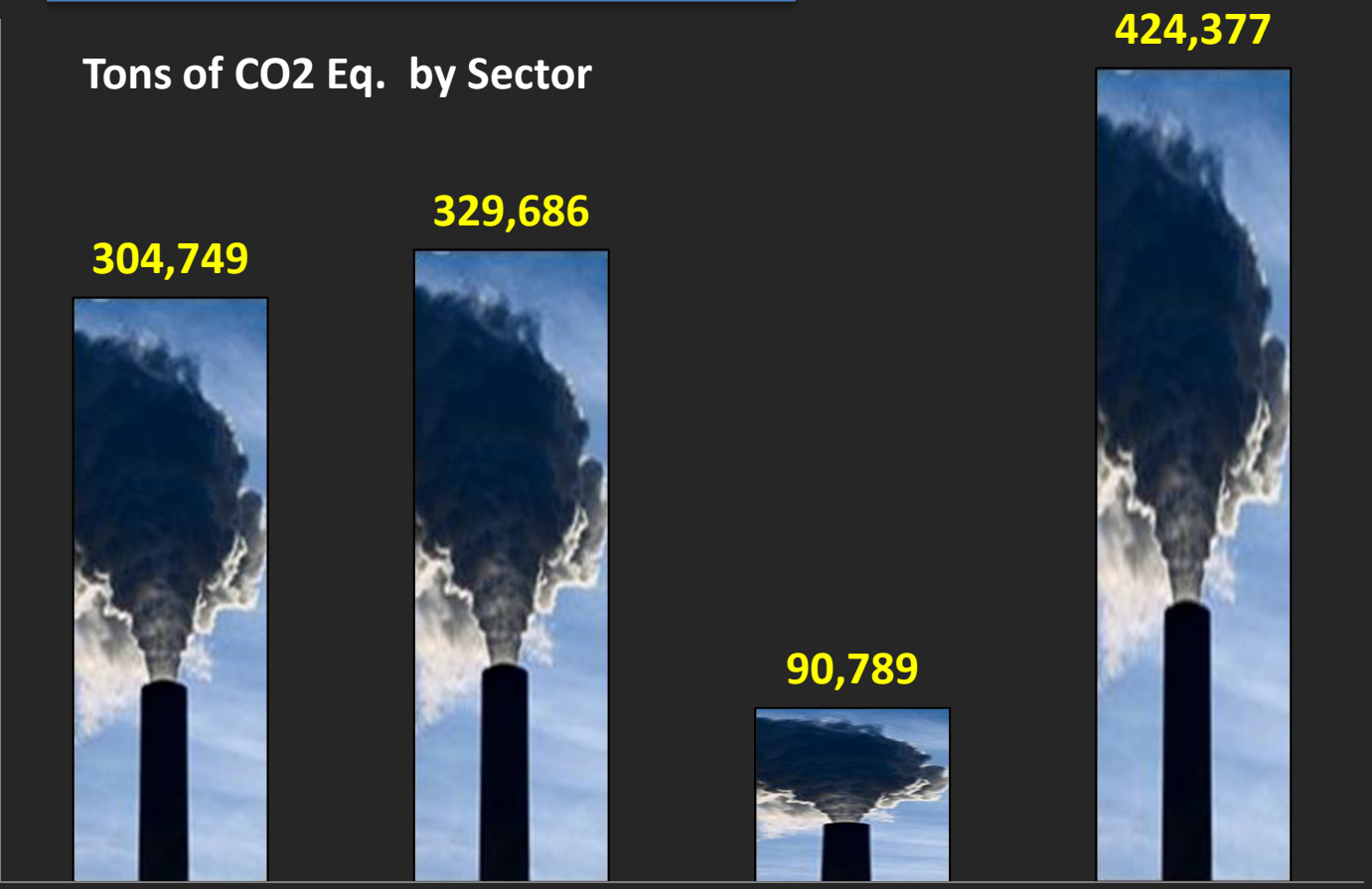
Every traffic signal has been converted to LED lighting which has resulted in low energy usage and a minimal operating cost.

Athletic Field lighting at Jim Warren Park is currently being upgraded to more efficient technology which will further reduce usage and associated costs.

Replacing existing street lights with LED, induction, or other efficient lighting will further decrease operating and maintenance costs as well as GHG emissions.

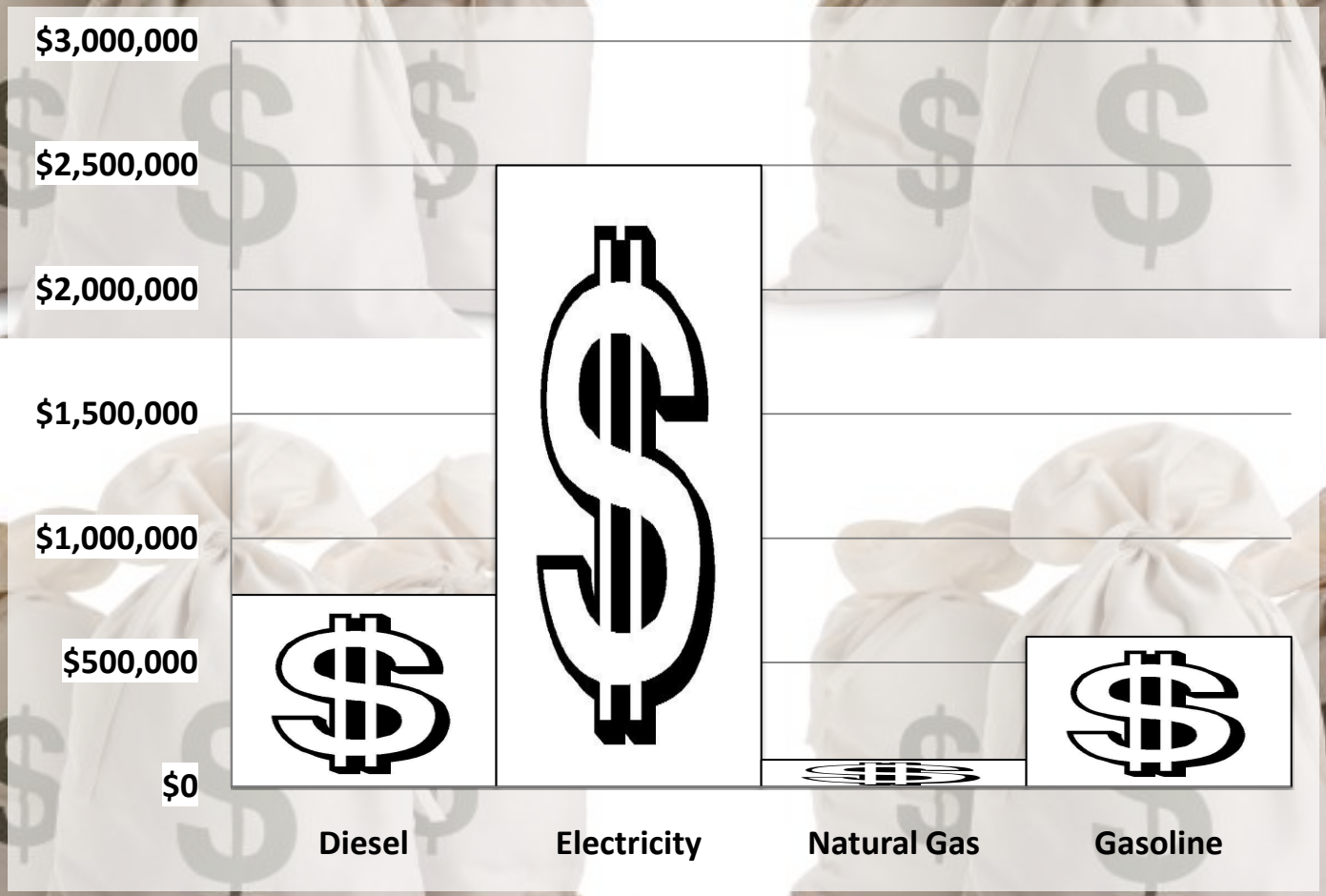
Community GHG Emissions

Tons of CO2 Eq. by Sector



The Future?

Municipal Energy Expenditures CY 2008



Sustainability Indicators

Currently,

3 Commercial Solar Installations in Franklin=38.52 kW

11 buildings in the process of gaining LEED Certification

3 Green roofs; Police HQ has largest in Southeast

Adopted Greenways & Open Space Master Plan

705 acres of City parks

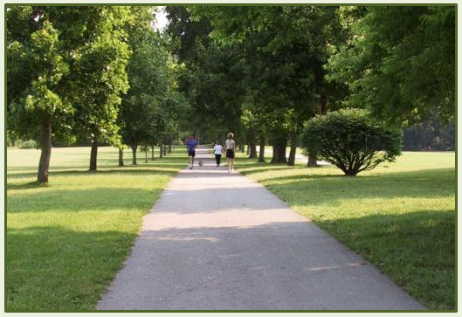
6 bike bollards installed downtown

10 miles of bike lanes

6 miles of multi-use trails (not in City parks)

3.5% of vehicles in Franklin are hybrids and EVs

151 Live Green Partners




WHAT'S
NEXT?

Implementation

Blue Bag Curbside Recycling

Initiatives:

Live Green Partnership

Energy Usage/GHG Inventory

LED Traffic Signals

Efficient Sports Lighting

LEED Policy

Largest Green Roof

EV Project

Solar Installations

Challenges:

Understanding

Planning

Coordinating

Priorities

Funding

Indifference